SISTEMES ELECTRÒNICS PROGRÉS

CONSIDERATIONS FOR THE CORRECT INSTALLATION OF THE

AGRÓNIC MONOCABLE

For the correct functioning of the modules and the system, we recommend keeping the following points in mind:

1 CABLE CHOICE

For optimal system operation, it is necessary to keep in mind the type of cable and some parameters detailed below.

- Bifilar cable with a section between 1.5mm^2 and 2.5mm^2 depending on the distance to be installed and number of modules.
- The insulation between wires must be cross-linked polyethylene to ensure low mutual capacitance.

Specifications of the cable to be used in a Monocable system	
• RV-K Cable: Type of cable used in most electrical installations. • RVFV-K Cable: Cable equal to RV-K but equipped with double galvanized steel strip reinforcement, under the external cover. Suitable for installations at risk of mechanical aggression, and especially recommended in places where the presence of rodents may imply a threat to the integrity of the cable.	
Nominal Voltage	0.6 / 1kV
Conductor	Flexible Copper (Class 5)
Insulation	XLPE (Cross-linked Polyethylene)
Exterior Coating	PVC (Polyvinyl Chloride)
R [Ohm/Km]	13.30 (section 1.5mm^2) 7.98 (section 2.5mm^2)

2 TYPE OF SOLENOIDS

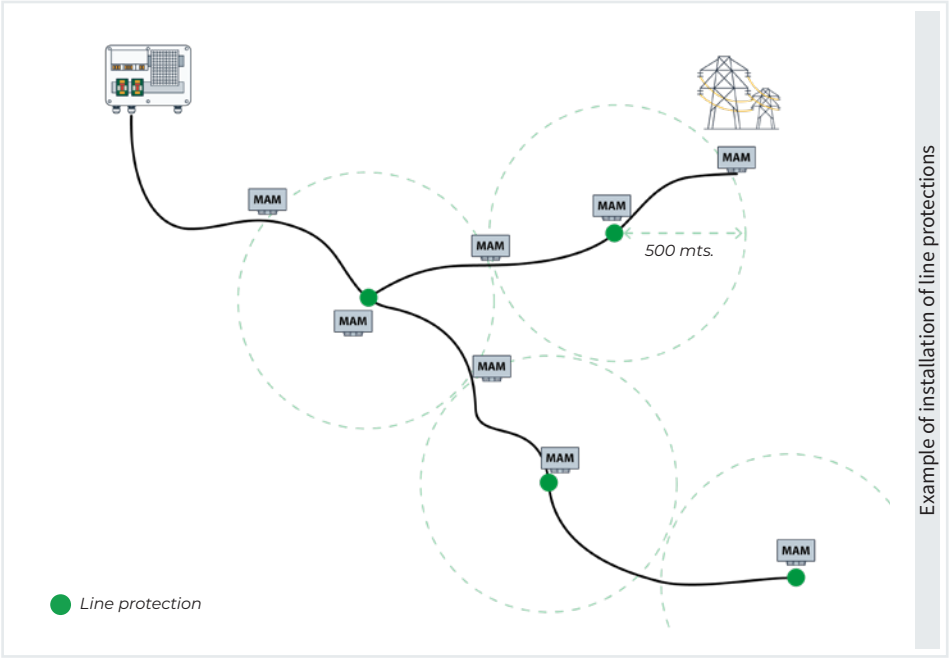
The Agrónic Monocable system uses 2-wire latch solenoids, it can be configured for 3 wires, although half of the outputs will be lost.

2- and 3-wire solenoids cannot be used simultaneously in the same module.

3 LINE PROTECTIONS

The installation of line protections is recommended under the following criteria, as shown in the figure:

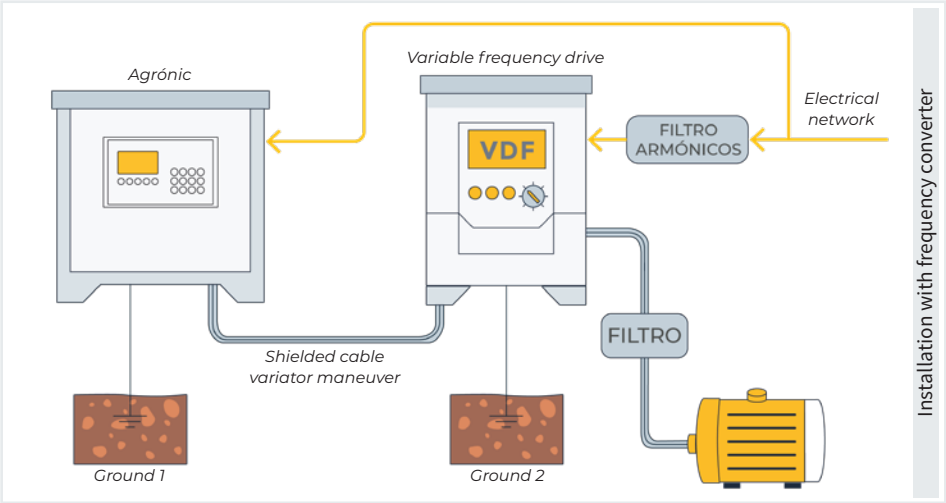
- Arrange them in points located in field modules covering areas of 500m radius.
- 'Never' install line protection if any of the following elements are within 500m:
  - Lightning rod
  - Electric tower
  - Any other ground spike associated to any other interfering element (drive, motor, etc...).



4 VARIABLE FREQUENCY DRIVE

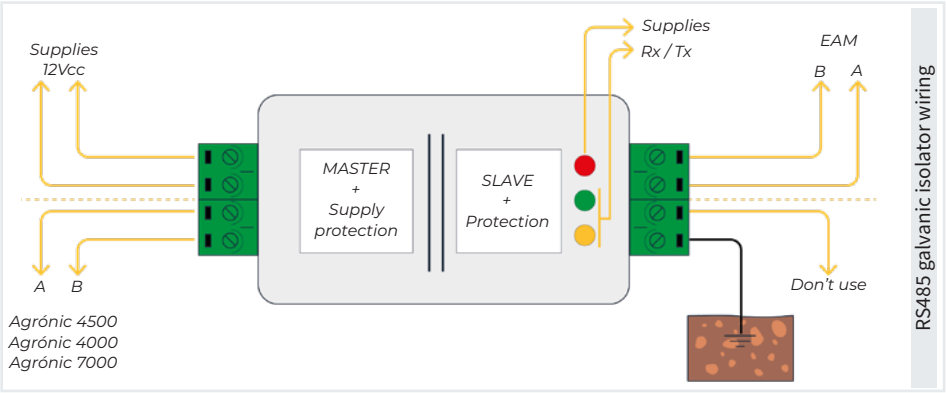
Installations with variable frequency drives easily present problems due to the electromagnetic interference generated by the drives themselves, and the motors connected to them.

If the installation consists of a frequency inverter, it must have harmonic filters and a shielded cable at the output of the inverter towards the motor, and not affect the controller and the Monocable system.

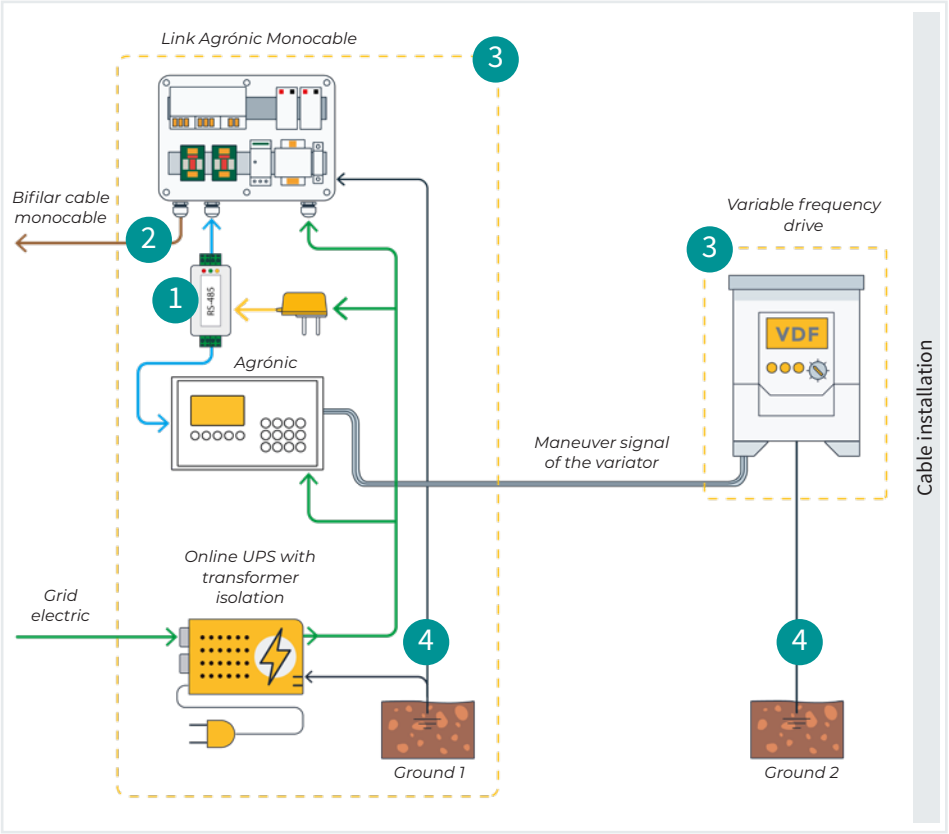


5 RS485 GALVANIC ISOLATOR WIRING

This galvanic isolator is suitable for solving RS485 line problems as well as protection against noise and electrostatic charges. Observe the following drawing for its connection.



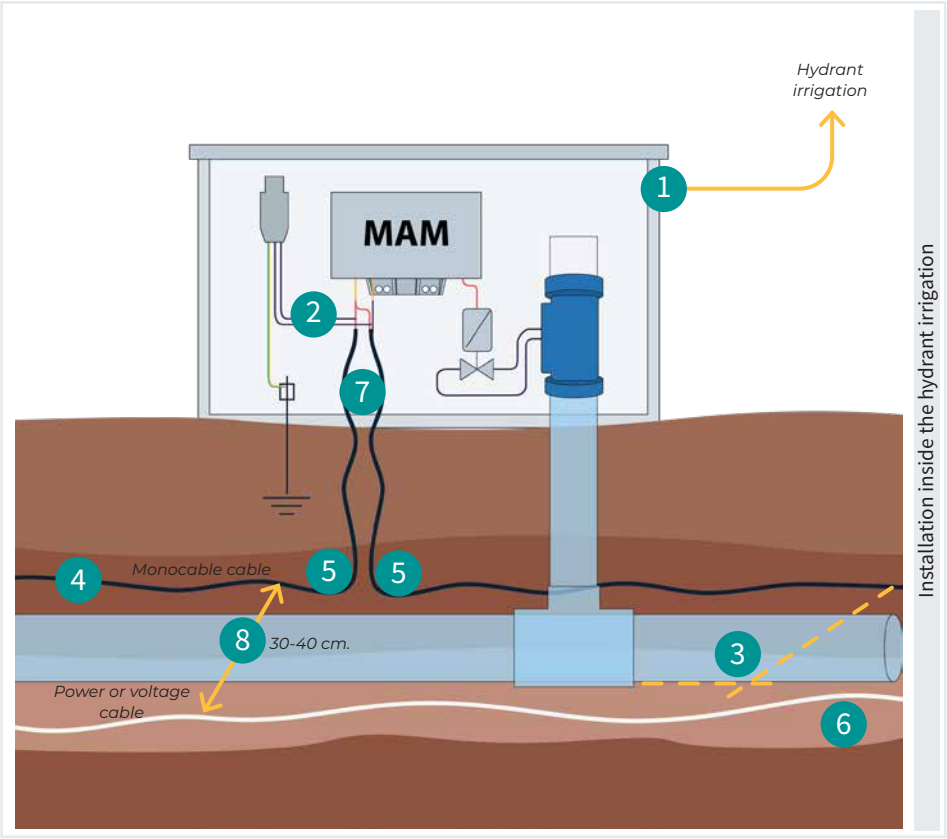
6 INSTALLATION OF CABLES IN THE IRRIGATION HOUSE



Bellow are some points to keep in mind when installing the cables:

1. RS485 cable: The RS485 port cable that links the Agrónic with the EAM must be separate and in a different channel from the power and voltage cables and also from the frequency inverter. (Minimum distance of 20 cm).
2. Monocable cable: The two-wire cable of the single,cable that goes to the field must also be saparated from the 2200 Vac voltage cables and the frequency converter.
3. Separation of the panels: 'Never' install the EAM and/or controller in the same panel together with other elements, such as the frequency inverter. Inside the irrigation house it is advisable to separate them as much as possible.
4. Grounding connecttion: The EAM ground must be in common with the Agrónic ground and must be independent of any other grounding in the installation (frequency inverter).

7 CABLE INSTALLATION IN THE FIELD



Below are some points to consider when installing the cable in the field:

1. Protection box: They should be placed inside watertight 'Hymel' type boxes for outdoors or inside irrigation chambers.
2. Grounding: No cable from the Monocable bus hose should be connected to ground.
3. Pipe trench: Install the cable in the same trench as the pipe and at the same depth to avoid cable breakage by agricultural machinery and rodents.
4. Monocable cable: Wind the Monocable cable run without stretching so that it does not cause breaks due to ground settlement.
5. Breakage prevention: It is essential to place the cables at a 90 degree angle and not in any other position, this is done in order to prevent possible breakage when the floor adjusts or settles.

6. Protection of the buried cable: It is advisable to use the same bed of soil that is used to place the pipe as protections for the buried cable. This prevents possible chafing or partial cuts in the cable that could affect its electrical properties, such as capacities, inductances and resistances, having a direct impact on communication signals. By using this method, the aim is to preserve the integrity of the cable and ensure optimal performance in data transmission.

7. Cable joining: When feasible, the connection between the end of one roll and the next will be carried out on the surface, taking advantage of the module connection. In situations where this is not possible, it is necessary to guarantee the complete tightness of the joint. This can be achieved through heat-shrinkable terminals with sealant of through resin joints to prevent possible leaks.

8. Cable separation: It is important to avoid installing a power or voltage cable together with the two-wire cable of the Monocable cable. Both cables must be separated by at least 30-40 cm to prevent interference.

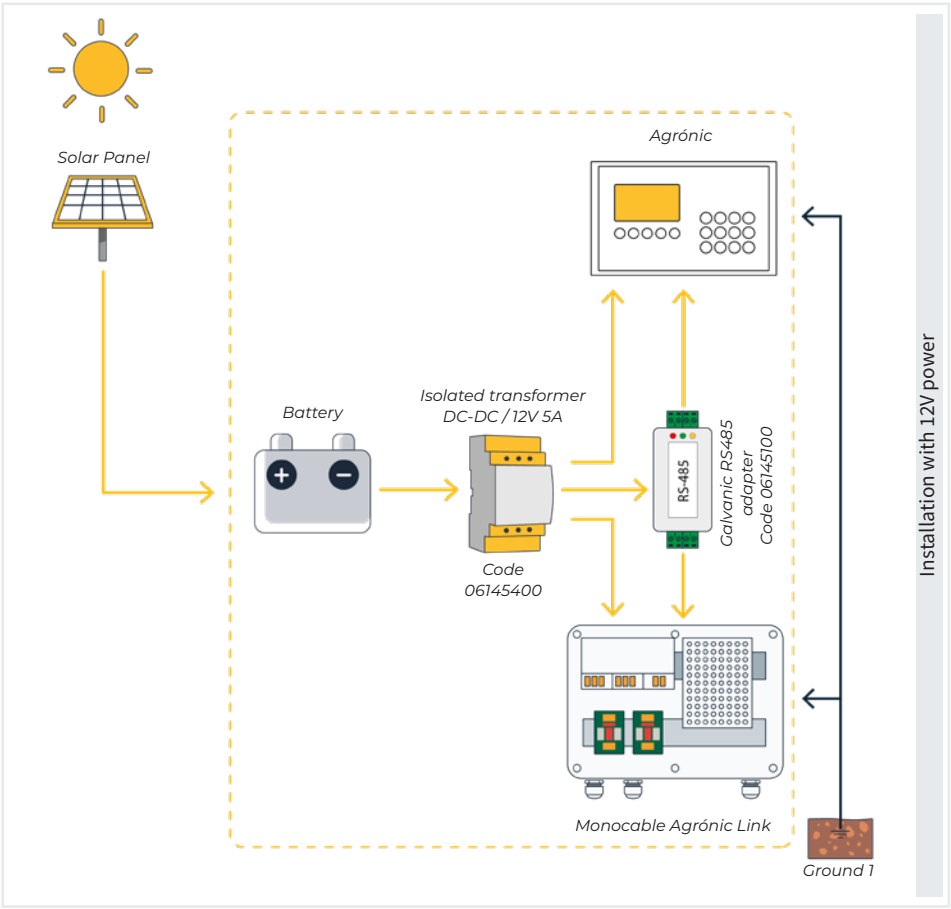
8 TYPES OF INSTALLATIONS

On the power supply systems, it is advisable to 'filter the power supply of the controllers' that manage the installation (Agrónic 4500, Agrónic 4000, Agrónic 7000).

8.1. 12V INSTALLATION

In this type of installation, the system is always in operation and there is constant synchronization in communications between the EAM and the modules.

Controller and EAM power supply: They are powered by a battery (12Vdc) which is charged by a solar panel. An isolated 12V DC-DC transformer must be installed at the system power input (Agrónic and EAM). It is advisable to install a galvanic isolator on the RS485 port.



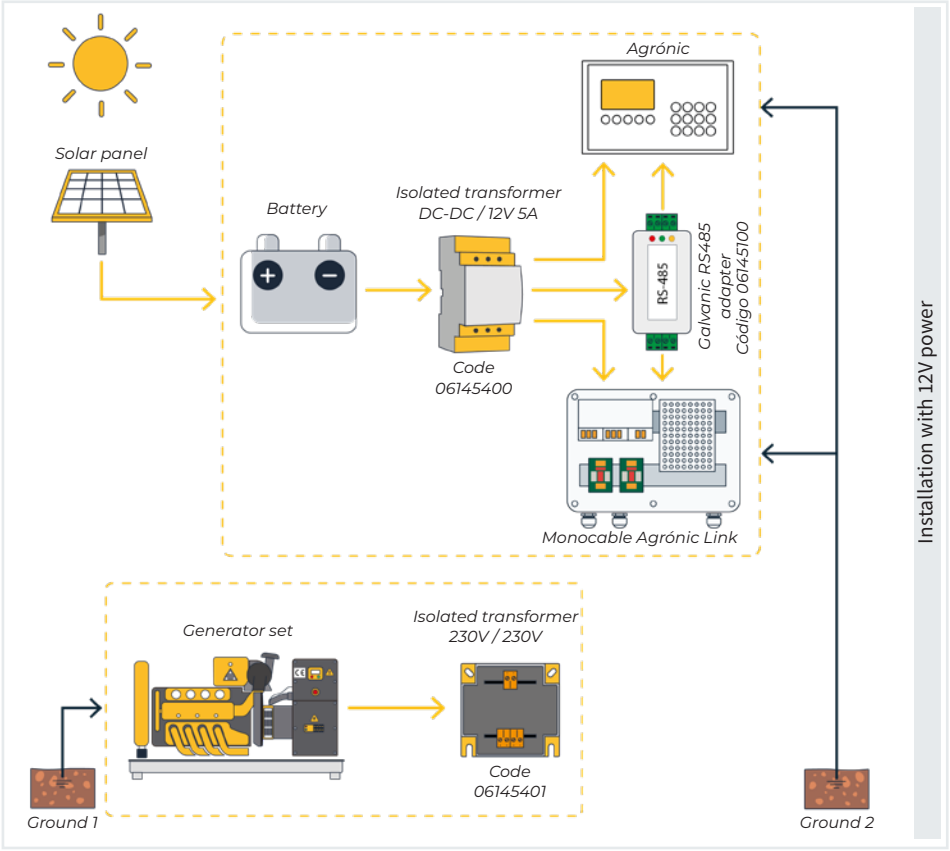
8.2. INSTALLATIONS WITH GENERATOR SET

8.2.1 Agrónic and EAM powered at 12V

In this type of installation, the system and monocable communications are constantly operational, and a voltage of 24 Vac is supplied every time the group is activated.

Power supply of the controller and the EAM: They are powered at 12V by a battery and an isolated DC-Dc 12V transformer. The battery is charged through a solar panel. It is advisable to install a galvanic isolator on the RS485 port.

Output power supply: The controller outputs are powered at 24 Vac through the group.



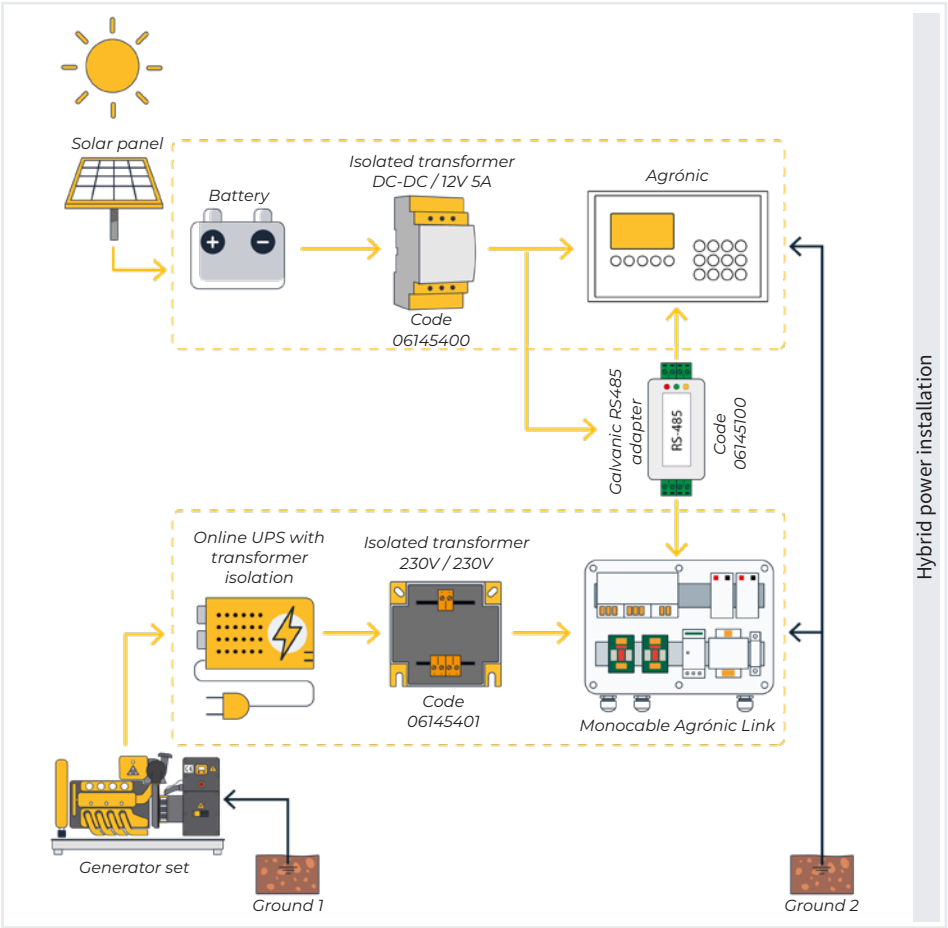
Important The battery that powers the Agrónic and the EAM must be independent from that of the generating set.

8.2.2 Agrónic and EAM with hybrid supply

In this type of installation, monocable system communications only operate when the group is active. It is recommended to apply a short delay when starting the program to ensure synchronization of the modules with the EAM.

Controller power supply: Install a battery and an isolated 12V DC-DC transformer at the input of the controller. It is advisable to install a galvanic isolator on the RS485 port.

EAM power supply: Install an online UPS with isolation transformer followed by an AC-AC transformer (220 Vac - 220 Vac).

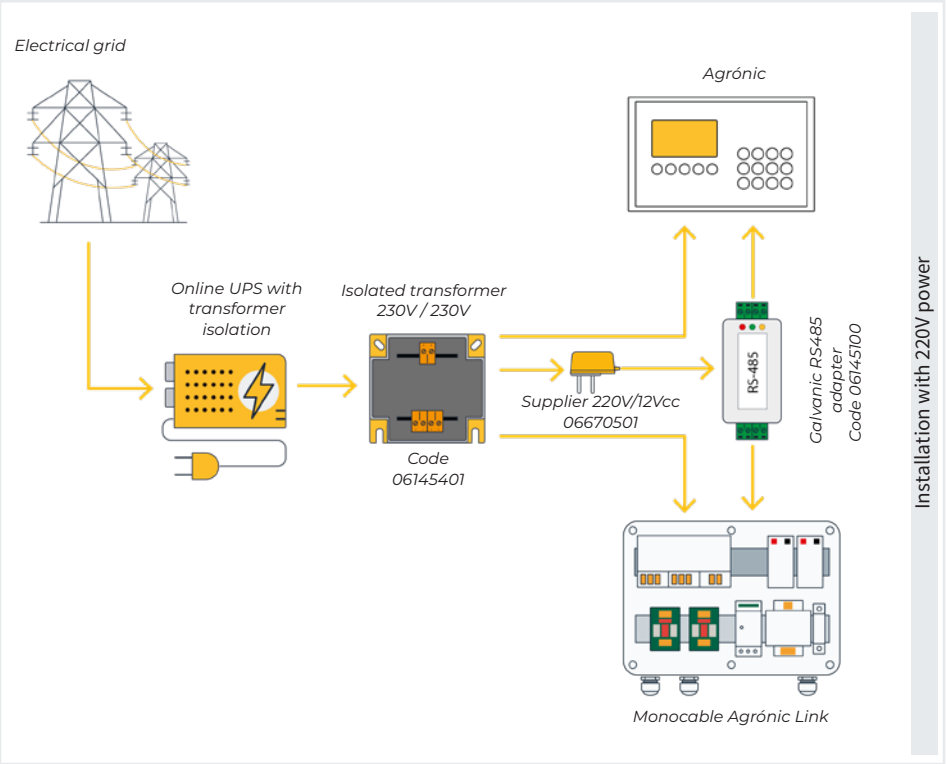


Important The battery that powers the Agrónic must be independent from that of the generating set.

8.3. INSTALLATION AT 220V

In this type of installation, the system is always in operation and there is constant synchronization in communications between the EAM and the modules (MAM).

Power supply of the controller and the EAM: They are powered at 220Vac and an online UPS and an isolated transformer must be installed to clean unwanted electrical noise.



SPACE RESERVED FOR THE USER

You can use this space to record information regarding the controller or the installation.

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